Teacher Resource 7.5

Key Vocabulary: Network Standards and Protocols

These are terms to be introduced or reinforced in this lesson.

| Term | Definition |
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| application | A computer application is a software program. In the OSI seven-layer model for computer networking, the application layer (the seventh level) controls how the programs interact with the network, by determining whether enough computer resources are available and controlling user authentication. |
| authentication | Using a login, password, or other identifier to verify a user’s identity for security purposes. |
| buffer | Functions on the second layer of the OSI seven-layer model, the data link layer. Like a lobby waiting room for data, it stores information before the information is sent to the network. |
| buffer overflow | The buffer can contain only so much information, so if too much is sent too quickly, the computer experiences a buffer overflow. |
| checksum | The Logical Link Control (LLC) sublayer of the data link layer in the OSI seven-layer model checks for errors in the data stream by adding up the bits that arrive and checking the total amount against the amount it expected to receive. If the total, or checksum, doesn’t match, the stream is resent. |
| client | A client is a computer, or an application on a computer, that requests files such as images, documents, websites, or databases from a network server. For example, an email client (such as Microsoft Outlook or Mozilla Thunderbird) is an application that allows users to send and receive email from their computer. |
| data link | The second layer of the OSI seven-layer model. Separated into two segments, the Media Access Control (MAC) layer and the Logical Link Control (LLC) layer, it controls how information is translated from pure physical data into information the computer understands. Also checks for errors in the data transmission. |
| Dynamic Host Configuration Protocol (DHCP) | Client computers use this protocol to obtain IP addresses from the server so that they can connect to a local area network or the Internet. |
| encryption | A method for keeping data private and secure by translating it into a secret code and requiring a password to decrypt it. |
| flow control | The methods and protocols used to adjust the flow of data across a network so that it is sent and received successfully. |
| frame | Refers to a packet of data as it is being sent across the network. In Serial Line Internet Protocol (SLIP), a frame is the code of information used to show where the packet starts and ends. |
| hexadecimal | The base-16 number system using numbers 0–9 and letters a–f. Number 15 of the decimal (common) number system is notated as F in hexadecimal. Hex is a step between decimal and binary, and can represent each byte of binary notation (8 bits) with one letter. |
| Hypertext Transfer Protocol (HTTP) | Controls how your client computer pulls web graphics, web pages, and information from a web server and displays them in your browser. |
| IEEE 802 | A family of standards for computer networking that is composed of many different protocols and defined by IEEE, the Institute of Electrical and Electronics Engineers. This family of standards controls Ethernet, wireless communications, and more. |
| layer | The OSI seven-layer model breaks up the process of preparing data for the network into seven layers. The protocols used for networking are split into categories based on what they do, and fit into these layers. However, since it is just a model, some protocols don’t fit neatly into the layers. |
| MAC address | The Media Access Control (MAC) address associated with a network adapter or network interface card. |
| model | A diagram or description that represents a system or phenomenon, used to explain, understand, and explore how it functions. |
| network handshake | The agreement achieved when two computers open a network session by establishing a connection and determining what protocols to use while communicating. |
| network segment | A cluster of computers attached by a switch or router. |
| OSI (Open Systems Interconnection) | *OSI* is short for the OSI reference model or OSI seven-layer model that defines a framework for using protocols by separating the functions of the network into seven layers. |
| physical | The first layer of the OSI seven-layer model, containing all the tangible cables and devices on the network, as well as electric signals. |
| Point-to-Point Protocol (PPP) | The current standard that replaces SLIP as the method for putting headers on data packets. It is used only in point-to-point direct connections. It operates in the second layer of the OSI seven-layer model and provides features that check for errors when the information is sent. |
| presentation | The presentation layer, sixth in the OSI seven-layer model, controls how information is presented to us. Also allows for encryption and compression. |
| protocol | A set of formal rules describing how to transmit data across a network. |
| Secure Sockets Layer (SSL) | A method of security that encrypts and protects data as it travels through the network. |
| Serial Line Internet Protocol (SLIP) | A simple protocol for adding a frame to packets that tells the network where the packet begins and ends. Used in direct, point-to-point dial-up connections only. Today, SLIP is mostly outdated. |
| server | A computer that stores documents, web pages, or databases for other computers on the local network to retrieve. Also controls how data packets are routed within the local network and sent to the Internet. |
| session | The fifth layer of the OSI seven-layer model; allows for establishing ongoing connections for applications such as instant messaging. |
| standard | A rule for group behavior that is mandated by a governing body or agreed on by general consensus. |
| Transmission Control Protocol (TCP) | Enables two host computers to establish a connection and ensures that packets are sent properly and put into the correct order when received. |
| transport | The fourth layer of the OSI seven-layer model, the transport layer makes sure data is sent and received properly across the network and checks for errors. |
| user | The end user or computer user is the person working on the computer that sends and receives messages through the network. |

Teacher Resource 7.6

Bibliography: Network Standards and Protocols

The following sources were used in the preparation of this lesson and may be useful to you as classroom resources. We check and update the URLs annually to ensure that they continue to be useful.

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